

- [130] R. Sasnauskas, Y. Chen, P. Collingbourne, J. Ketema, J. Taneja, and J. Regehr, “Souper: A Synthesizing Superoptimizer,” *CoRR*, vol. abs/1711.04422, 2017.
- [131] B. G. Ryder, “Constructing the Call Graph of a Program,” *IEEE Transactions on Software Engineering*, no. 3, pp. 216–226, 1979.
- [132] S. Narayan, C. Disselkoen, D. Moghimi, S. Cauligi, E. Johnson, Z. Gang, A. Vahldiek-Oberwagner, R. Sahita, H. Shacham, D. M. Tullsen, and D. Stefan, “Swivel: Hardening WebAssembly against Spectre,” in *30th USENIX Security Symposium, USENIX Security 2021, August 11-13, 2021*, pp. 1433–1450, 2021.
- [133] E. Johnson, D. Thien, Y. Alhessi, S. Narayan, F. Brown, S. Lerner, T. McMullen, S. Savage, and D. Stefan, “SFI Safety for Native-compiled Wasm,” *NDSS. Internet Society*, 2021.
- [134] M. Willsey, C. Nandi, Y. R. Wang, O. Flatt, Z. Tatlock, and P. Panchekha, “Egg: Fast and Extensible Equality Saturation,” *Proc. ACM Program. Lang.*, vol. 5, no. POPL, pp. 1–29, 2021.
- [135] “Stop a wasm compiler bug before it becomes a problem | fastly.” <https://www.fastly.com/blog/defense-in-depth-stopping-a-wasm-compiler-bug-before-it-became-a-problem>, 2021.
- [136] D. Cao, R. Kunkel, C. Nandi, M. Willsey, Z. Tatlock, and N. Polikarpova, “babble: Learning Better Abstractions with E-Graphs and Anti-unification,” *Proc. ACM Program. Lang.*, vol. 7, no. POPL, pp. 396–424, 2023.
- [137] R. Tate, M. Stepp, Z. Tatlock, and S. Lerner, “Equality Saturation: A New Approach to Optimization,” in *Proceedings of the 36th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL*, pp. 264–276, 2009.
- [138] T. D. Morgan and J. W. Morgan, “Web Timing Attacks Made Practical,” *Black Hat*, 2015.
- [139] T. Schnitzler, K. Kohls, E. Bitsikas, and C. Pöpper, “Hope of Delivery: Extracting User Locations From Mobile Instant Messengers,” in *30th Annual Network and Distributed System Security Symposium, NDSS 2023, San Diego, California, USA, February 27 - March 3, 2023*, The Internet Society, 2023.
- [140] Mozilla, “Protections Against Fingerprinting and Cryptocurrency Mining Available in Firefox Nightly and Beta ,” 2019.
- [141] F. Cohen, “Computer Viruses: Theory and Experiments,” *Comput. Secur.*, vol. 6, no. 1, pp. 22–35, 1987.

- [142] P. Kocher, D. Genkin, D. Gruss, W. Haas, M. Hamburg, M. Lipp, S. Mangard, T. Prescher, M. Schwarz, and Y. Yarom, “Spectre Attacks: Exploiting Speculative Execution,” *meltdownattack.com*, 2018.
- [143] M. Schwarz, C. Maurice, D. Gruss, and S. Mangard, “Fantastic Timers and Where to Find Them: High-resolution Microarchitectural Attacks in JavaScript,” in *Financial Cryptography and Data Security - 21st International Conference, FC*, vol. 10322, pp. 247–267, 2017.
- [144] G. J. Duck, X. Gao, and A. Roychoudhury, “Binary Rewriting Without Control Flow Recovery,” in *Proceedings of the 41st ACM SIGPLAN International Conference on Programming Language Design and Implementation, PLDI*, pp. 151–163, 2020.

Part II

Included papers

WEBASSEMBLY DIVERSIFICATION FOR MALWARE EVASION

Javier Cabrera-Arteaga, Tim Toady, Martin Monperrus, Benoit Baudry
Computers & Security, Volume 131, 2023

<https://www.sciencedirect.com/science/article/pii/S0167404823002067>

WASM-MUTATE: FAST AND EFFECTIVE BINARY DIVERSIFICATION FOR WEBASSEMBLY

Javier Cabrera-Arteaga, Nick Fitzgerald, Martin Monperrus, Benoit Baudry
Submitted to Computers & Security, under revision

CROW: CODE DIVERSIFICATION FOR WEBASSEMBLY

Javier Cabrera-Arteaga, Orestis Floros, Oscar Vera-Pérez, Benoit Baudry,
Martin Monperrus

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<https://doi.org/10.14722/madweb.2021.23004>

MULTI-VARIANT EXECUTION AT THE EDGE

Javier Cabrera-Arteaga, Pierre Laperdrix, Martin Monperrus, Benoit Baudry
*Conference on Computer and Communications Security (CCS 2022), Moving
Target Defense (MTD)*

<https://dl.acm.org/doi/abs/10.1145/3560828.3564007>

SUPEROPTIMIZATION OF WEBASSEMBLY BYTECODE

Javier Cabrera-Arteaga, Shrinish Donde, Jian Gu, Orestis Floros, Lucas Satabin, Benoit Baudry, Martin Monperrus

Conference Companion of the 4th International Conference on Art, Science, and Engineering of Programming (Programming 2021), MoreVMs

<https://doi.org/10.1145/3397537.3397567>

SCALABLE COMPARISON OF JAVASCRIPT V8 BYTECODE TRACES

Javier Cabrera-Arteaga, Martin Monperrus, Benoit Baudry
*11th ACM SIGPLAN International Workshop on Virtual Machines and
Intermediate Languages (SPLASH 2019)*

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